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# Air-to-Ground Proceeding

## WT Docket No. 03-103

### Presentation to FCC

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AirCell

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# AirCell

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- AirCell has *unrivaled* history of innovation in ATG service
  - Pioneered efficient reuse of cellular frequencies
  - Overcame “scorched earth” resistance from entrenched carriers
  - Supported by multiple FCC and court decisions
- AirCell has brought same innovation to ATG broadband services proposal
  - ATG broadband system designed and flight tested
  - Efficient, competitive ATG spectrum-sharing

# AirCell

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- AirCell has rocketed to number one supplier of ATG systems in the US.
  - Provides service to Federal, State, and Local agencies (FBI, US Customs, DOE, etc)
  - Brings crew and emergency coms to Frontier Airlines and Island Air
  - Leading OEM provider to General Aviation
- Result: *Dramatically reduced equipment and service costs to General Aviation market*

# FCC Air-to-Ground Goals

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- Promote and deploy innovative, spectrum-efficient technologies
- Greater opportunities for the competitive provision of air-to-ground services:
  - Lower prices and increased choices in wireless services to consumers while traveling by commercial airliner
- *"We are concerned that there is only one licensee remaining in this service....."* (FCC NPRM 03-103)

# Airline and Passenger Goals

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- Passengers want airborne access for cell phones, PDAs, laptops
  - Same capabilities as on ground, no special set-ups
  - Broadband data services for internet and email
  - Substantially same price and services as on ground
- The airline industry is speaking up for broadband *and* competition
- Cost-effective broadband ATG network is needed to provide services at attractive pricing

# Competition in ATG services...

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- Competition key to innovation, variety and price
  - Airlines will have choice and ability to switch without lock-ins
  - Incentive for operators to offer passengers the *broadest* services at the *best* prices
  - All airlines and passengers assured of affordable access to broadband services
- Satellite-based systems cannot provide *real* competition to ATG systems in the US
  - Broadband systems are extremely expensive - \$500,000 per aircraft - suitable for long-haul, not for thousands of domestic aircraft
  - Low cost satellites can't provide broadband (Iridium & Globalstar)

# Licensing Alternatives

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- Exclusive spectrum plan
  - One exclusive 2.5 MHz license (A block) and one exclusive 1.5 MHz license (B block)
  - Doesn't provide *real* competition
    - No cost-effective broadband possible in 1.5 MHz spectrum
    - Narrowband incapable of addressing ATG passenger demand (Example: existing AirFone service)
  - Does *not* maximize use of scarce spectrum
    - Monopoly - no competitive pressure on A block
    - B block will be unused, or used marginally

# Licensing Alternatives

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- AirCell and Boeing spectrum plans
  - Accommodate two to four carriers
    - Individual plans jointly supported by AirCell and Boeing
  - Provide vigorous competition on a level playing field
  - Maximize the efficient and innovative use of scarce ATG spectrum
    - Support much more passenger and airline traffic
  - Achieve FCC Goals



# AirCell Proposal

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- Innovative use of existing technology to allow multiple carriers to share the spectrum
- Virtually no cross-system impact due to isolation mechanisms
- Each carrier has implementation flexibility
- Full service *all the way to the ground* (“deck-to-deck”)
- Simple rules for spectrum sharing

# AirCell “Deck-to-Deck” service

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- AirCell proposal offers full “deck-to-deck” service
  - Multiple service providers (broadband systems) ease capacity problem around airport
  - Provides maximum spectrum efficiency
    - ATG networks used down to 200’ –300’ altitude
    - Hands-off to higher capacity terrestrial networks during approach and on ground
  - Real world airport traffic patterns modeled
  - Four operators can be accommodated
  - Simple site coordination mechanism around airport

# Simple Rules Drive AirCell Proposal

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- Simple rules for sharing of spectrum
  - Similar to terrestrial systems
  - Offers level playing field for all operators
    - No undue advantage to a first system constructed
    - Operator flexibility to use variety of techniques (tower height, antenna, transmit power, distance, etc.)
  - Accountability rests with each operator
- All rules can be met with commercial, off-the-shelf equipment

# Airfone Proposal

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- Airfone wants to keep its monopoly status
- Airfone sat on its monopoly for years
  - FCC proposed bringing innovation to the ATG band – citing innovators like AirCell
- Airfone has never submitted system design or simulation information to support claims
- Objections to AirCell proposal are disingenuous and self-serving
  - Same old extreme examples and misleading claims

# Airfone Misstatements

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Airfone's presentations misstate the facts about AirCell's plan. The truth is:

- No performance penalty for multiple systems
- AirCell is proposing CDMA - just like Airfone - which will provide full broadband service
- AirCell will provide full broadband to the ground with no problems below 10,000 feet
- Ample flexibility to innovate and evolve in the future with a few, manageable coordination requirements
- Satellites are no substitute for terrestrial ATG. Satellites either too expensive or incapable of providing broadband

# Summary

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- AirCell offers an innovative, spectrum-efficient proposal *that will work*
  - Unique ATG market enables efficient sharing of spectrum without inter-system interference
  - Provides up to four times the capacity of a single carrier
- Each operator has flexibility in network design, technology choice, and technology evolution
- No performance penalty for multiple systems
  - **Capacity and data rates unaffected by spectrum-sharing**
  - **Multiple operators *all* provide *broadband* service**

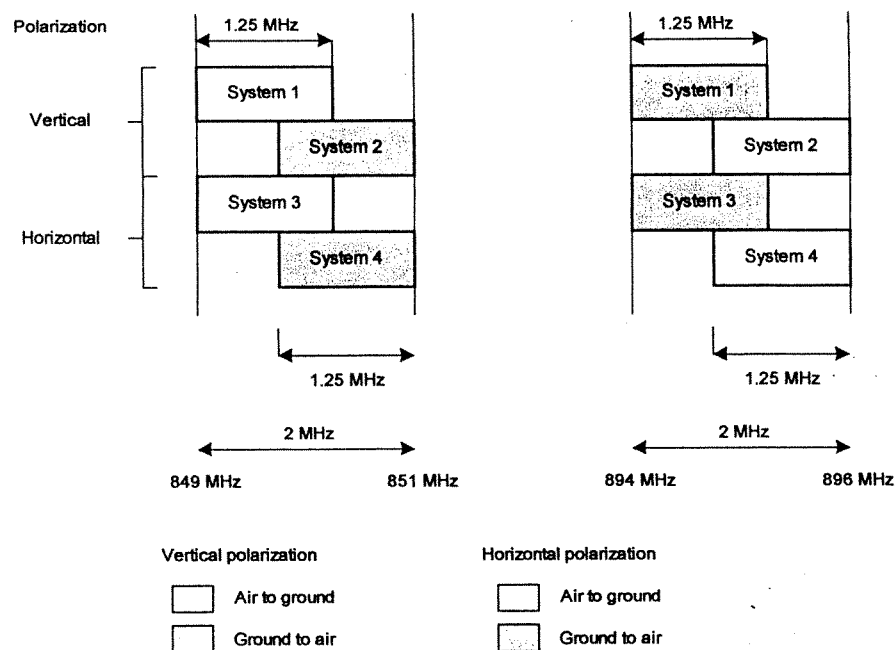
# Summary

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- The public will be better served with a healthy competitive environment for ATG services
- With only 4 MHz to serve the entire aviation telecom market, the FCC needs to take the extra steps to insure a competitive industry, and to accomplish the Commission's goals in this proceeding
- The Commission *once again* has an opportunity to support innovation, maximize the efficient use of scarce spectrum and support competition

# Appendix – AirCell's Proposed rules

## Spectrum Plan





# Appendix – AirCell's Proposed rules

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- Rules based on two factors
  - Distance between different operators' base stations
  - Interference from a base station at a given radius (interference always kept below thermal noise floor)
- Around airports
  - Airport Ring (8-10 miles radius from airport center)
  - Up to 3 sites per operator
- Primary Coverage sites
  - 65 miles between different service providers' sites
- Capacity sites to meet growth or high-traffic pockets
  - 45 miles between different service providers' sites
- No distance limitation between same, co-duplexed service provider sites